Realizing the Benefits of Cycling and Walking
The Case for a Comprehensive Active Transportation Strategy for B.C.

Executive Summary

Cycling and walking are popular activities with the potential to grow substantially and thus provide B.C. families with more affordable transportation choices and economic opportunities. With sufficient investment, cycling and walking can become a practical option for many more people, leading to significantly improved fitness and reduced greenhouse gas emissions, congestion and traffic fatalities.

Investing in cycling and walking will benefit the economy by increasing tourism, reducing healthcare costs, increasing workplace productivity, attracting talented workers and reducing the societal costs of traffic fatalities and injuries (currently over $1 billion per year).

For the ten-year Transportation Plan, we strongly encourage the Province to implement a comprehensive Active Transportation Strategy as part of a complete multi-modal transportation system designed for people of all ages and abilities. Safe and comfortable access for people walking, cycling, riding transit or using wheelchairs should be an integral part of the plan and on all the roads and bridges in BC.

Given the significant benefits of cycling and walking, we encourage the Province to develop ambitious goals and targets for cycling and walking. Such goals and targets were not present in the previous transportation plan, making tracking progress and allocating resources more challenging.

Goals and Objectives

→ Ensure that BC grows upon its North American leadership in cycling for transportation
→ BC becomes a North American leader in cycling tourism
→ BC becomes one of the safest places in the world to ride a bicycle
→ Through increased walking and cycling to school, BC children become the healthiest in the world

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**Ten year targets**

- $400 million per year in economic activity from cycling tourism (the same as Oregon)
- Increased cycling to work mode share from 2% to 8%
- Increased percentage of cycling trips that are made by women, from 20% to 50%
- Increased percentage of children who always walk and cycle to school, from 34% to 40%
- Zero cycling and walking fatalities (currently averaging 60/year)

**Recommended Actions**

1. **Accelerated provincial investment in walking and cycling, totalling $100 million per year**
   - Provincial Roads and Bridges - Dedicated funding for upgrading cycling and walking facilities;
   - Bike BC and Complete Streets - Increased Bike BC cost sharing funding to complete cycling networks in communities and new cost sharing funding for complete streets with all-ages cycling facilities that are also safer and more comfortable for walking;
   - Funding for Safe and Healthy Routes to School; and
   - Cycling Tourism - Funding for trails and paths used by cycling and walking tourists.

2. **Evidence-Based Design Standards for Cycling Facility Design**
   - The adoption of evidence-based standards for cycling facilities that are both appropriate for all ages and abilities and higher-speed cycling;
   - Policies and procedures to ensure these standards are followed on new projects; and
   - Policies and procedures to enable complete streets on Provincial roads in communities.

3. **Education and Marketing**
   - Universally available cycling safety skills training for children and adults with provincial funding;
   - Improved and integrated cycling and driver education;
   - Update and increase the distribution of cycling education material including Bike Sense;
   - Educate people cycling and driving on new types of cycling facilities; and
   - Increase funding for cycling marketing programs including Bike to Work Week;

4. **Hazard Reduction**
   - Improved reporting and tracking of cycling hazards, injuries and collisions;
   - Improved standards & funding for maintenance & hazard removal on roads & paths used for cycling;
   - Improved cycling and walking construction management policies and practices;

5. **Legislation and Enforcement**
   - Vulnerable Road Users Legislation to improve the safety and legal protection of people walking and cycling including a safe passing distance (1m) law and allowing riding two abreast;
   - Blanket speed limits lower than 30km/h enabling municipalities to cost-effectively reduce speeds;
   - Increased enforcement focused on reducing walking and cycling injuries and fatalities;
   - Legislation giving municipalities and regions new funding authority for cycling, walking & transit.

6. **Cycling Tourism**
   - A comprehensive funded cycling tourism strategy with infrastructure, support services & marketing.

The BC Cycling Coalition’s member organizations represent thousands of people across the Province.

AMS Bike Co-op
Comox Valley Cycling Coalition
Greater Langley Cycling Coalition
HUB (Metro Vancouver)
Kelowna Area Cycling Coalition
Penticton and Area Cycling Association

BC Randonneurs Cycling Club
Cross Canada Cycle Tour Society
Greater Nanaimo Cycling Coalition Island Pathways
North Shore Safety Council
Powell River Cycling Association

Bike to Work BC
Cycling Abbotsford
Greater Victoria Cycling Coalition
Juan De Fuca Cycling Coalition Oceanside
Cycling Coalition
Trails BC
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      Prioritizing Safety with Strict Speed Limit Enforcement
      Strict Enforcement at Night and When Visibility is Poor
      Strict Speed Limit Enforcement When Cyclists Present
      Strict Speed Limit Enforcement In Rightmost Travel Lane
      Speed Enforcement Cameras

6. Cycling Tourism
Cycling is Popular

Cycling is a popular activity with the potential for substantial growth. Around 70% of B.C. residents ride a bicycle at least once a year, 42% ride at least once a month and 25% ride at least once a week. People would like to cycle more: 65% saying they would ride more often if there were more bicycle paths separated from traffic\(^1\).

Significant progress has been made in the communities that have invested in cycling. For example, in some areas of Vancouver, cycling commuting mode share has risen to nearly 15%. However, overall, little progress has been made overall in most of B.C., with commuting by bicycle only increasing from 1.98% in 2001 to 2.13% in 2011.

**Cycling Commuting Mode Share\(^2\)**

<table>
<thead>
<tr>
<th>Location</th>
<th>2006</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grandview Woodlands, Vanc</td>
<td>11.30</td>
<td>14.70</td>
</tr>
<tr>
<td>Strathcona, Vanc</td>
<td>9.20</td>
<td>14.10</td>
</tr>
<tr>
<td>South Cambie, Vanc</td>
<td>9.80</td>
<td>12.70</td>
</tr>
<tr>
<td>West Point Grey, Vanc</td>
<td>9.60</td>
<td>11.80</td>
</tr>
<tr>
<td>Victoria, City</td>
<td>9.50</td>
<td>10.60</td>
</tr>
<tr>
<td>Oak Bay, District</td>
<td>10.40</td>
<td>10.20</td>
</tr>
<tr>
<td>Esquimalt, District</td>
<td>5.40</td>
<td>6.40</td>
</tr>
<tr>
<td>Saanich, District</td>
<td>5.20</td>
<td>5.40</td>
</tr>
<tr>
<td>Vancouver, City</td>
<td>3.70</td>
<td>4.40</td>
</tr>
<tr>
<td>Sidney, Town</td>
<td>4.60</td>
<td>3.70</td>
</tr>
<tr>
<td>Penticton, City</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Kelowna, City</td>
<td>3.00</td>
<td>3.50</td>
</tr>
<tr>
<td>Courtenay, City</td>
<td>4.60</td>
<td>2.40</td>
</tr>
<tr>
<td>BC</td>
<td>2.00</td>
<td>2.10</td>
</tr>
<tr>
<td>Vernon, City</td>
<td>2.30</td>
<td>1.80</td>
</tr>
<tr>
<td>Metro Vancouver</td>
<td>1.70</td>
<td>1.80</td>
</tr>
<tr>
<td>Powell River, City</td>
<td>2.10</td>
<td>1.30</td>
</tr>
<tr>
<td>Canada</td>
<td>1.30</td>
<td>1.30</td>
</tr>
</tbody>
</table>

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\(^1\) Andrea O’Brien, British Columbia Cycling Coalition: Cycling Poll, 2013, NRG Research Group, April 22nd, 2013, [http://bccc.bc.ca/reports/bc-cycling-poll.pdf](http://bccc.bc.ca/reports/bc-cycling-poll.pdf)

Cycling Potential

According to the 2011 National Household Survey, 42% of commutes are under 5 km, a reasonable cycling distance. Electric bicycles have the potential to increase the average cycling commute distance significantly. For example, in Germany, the average bicycle commute is 6 km while the average electric bicycle commute is 9 km. In B.C., 65% of commutes are under 10 km making them practical using an electric bike.

The chart below illustrates the importance of cycling in providing people with an alternative to driving. Transit use in British Columbia is only slightly below the European average. However, cycling in British Columbia is far below European levels indicating that there is much room to grow.
The Economic Benefits of Cycling

**Cycling Tourism**

Building on the success of Spirit of 2010 Trails and the Trans Canada Trail, a network of cycling routes linking communities and attractions throughout the province will also offer visitors and residents wonderful cycle touring experiences. A dramatic increase in cycle tourism could have significant economic benefits to rural and urban BC communities.

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3 Bike Utah, 2014.
For example, Oregon estimated that in 2012, cycling tourists contributed $400 million to their economy while cycle tourism in Europe is worth almost $60 billion per year. Québec’s Route Verte, a province-wide network of cycling routes, has proven to be very effective in attracting tourists from around the world and nearby states and provinces. In 2006 it is estimated that Route Verte users spent $134 million supporting over 2,800 jobs. This economic activity is estimated to generate more than $36 million in tax revenue for the provincial and federal governments.

**Attracting Talent and Jobs**

Cities around North America are improving their bicycle networks to attract talent, companies and jobs.

“Biking is definitely part of our strategy to attract and retain businesses in order to compete in a mobile world,” says Minneapolis Mayor R.T. Rybak, as we glide across the Mississippi River on one of two bike-and-pedestrian bridges that connect downtown to the University of Minnesota. “We want young talent to come here and stay. And good biking is one of the least expensive ways to send that message.”

Young people today are driving significantly less than previous generations, according to a flurry of recent reports. These young people represent the “creative class” talent pool that many companies covet. That’s why civic, business, and political leaders around the country are paying attention to the next generation’s wishes for lively, liveable places to work and play. This means ample transportation options like biking—not only for commuting to work, but also for recreation after work and, in some cases, over the lunch hour.

Chicago Mayor Rahm Emanuel was elected on an aggressive platform of bringing new tech and creative businesses to the city. He scored a major coup with Google-Motorola Mobility’s announcement that it was moving more than 2,000 jobs from a suburban campus to the heart of the city. “One of the things that employees look [at] today is the quality of life and quality of transportation because of the ease that comes with it,” Emanuel explained. “And that ease is having trains as a choice, buses as a choice, and bikes as a choice [for] getting to and from work.”

**Workplace Productivity**

There are significant benefits to employers of having staff that are physically active. Employees who participate in physical activities report fewer days off due to illness (by 6-32%), lower turnover rates, lower healthcare costs (by 20-55%) and increased productivity (by 2-52%) than non-physically active employees.

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Commuting by bicycle allows the employee to build physical activity into their daily routine. With people's many responsibilities and daily time commitments, using active transportation may indeed be the only way they can get the daily physical activity they require. Commuting by active transportation may prove to be more acceptable and more cost-efficient than programs that focus on activities at the work site during the day.\(^8\)

The ability of a physically active executive group to make complex decisions increases dramatically compared to non-exercisers. Studies suggest that those who exercise work at full efficiency all day, amounting to a 12.5% increase in productivity over those who do not exercise.\(^9\) In companies with employee physical activity initiatives, the improvements in productivity and reductions in absenteeism, turnover and injury can result in a benefit of $571 per worker per year.\(^10\)

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Cycling and Walking Safety

The British Columbia Road Safety Strategy 2015 and Beyond states that while motor vehicle occupant fatalities have decreased significantly, “Since 2002, there has been virtually no progress in achieving better injury and fatality outcomes for pedestrians and cyclists, who are among the most vulnerable and least protected types of road users.” As shown in the table below, B.C. has significantly higher rates of cycling fatalities than several European countries.

Table 1. Comparison of cycling fatality rates by jurisdictions

<table>
<thead>
<tr>
<th></th>
<th>B.C.</th>
<th>Germany</th>
<th>Denmark</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities per 100 million km</td>
<td>2.6</td>
<td>1.7</td>
<td>1.5</td>
<td>1.1</td>
</tr>
</tbody>
</table>

The Cost of Fatalities and Injuries

Based on research by Transport Canada, the societal cost of a traffic fatality is estimated to be around $15 million dollars while that of an injury is around $50,000. Thus the average of 60 walking and cycling fatalities have a societal cost of around $900 million per year. The motor vehicle collisions injuring 1,500 cyclists and 2,400 pedestrians cost around $185 million per year. While numbers are not tracked on cyclists injured in incidents not involving motor vehicles, a study of emergency room visits in Vancouver and Toronto indicates around the same number of cyclists are injured due to falls and collisions with hazards, cyclists and pedestrians. As well, the ICBC statistics above do not include collisions with the open doors of parked cars which the above study indicates amount to around 20% of injuries involving moving motor vehicles. Thus, likely around an additional 1,800 cyclists are injured in BC at a cost of around $90 million per year.

Congestion

In addition to the really high human costs, serious injuries and fatalities to people walking and cycling can block busy roads and bridges for hours, significantly interrupting the flow of goods and causing frustration to all road users. It is estimated that up to 25% of congestion is caused by collisions.

Combatting Childhood Obesity and Physical Inactivity

A Strategy for Combatting Childhood Obesity and Physical Inactivity in British Columbia[1], by the Select Standing Committee on Health of the Legislative Assembly of BC, estimated that the direct and indirect cost of obesity and inactivity combined in British Columbia is likely in the range of one billion dollars a year and two to three times larger when including reduced productivity and increased

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12 K Teschke et al, 2013
susceptibility to illness and disease. This situation may become even worse if action is not taken to enable and encourage physical activity among children. The Committee stated "We also believe that schools, municipalities, and the Province must work together to ensure that every student in British Columbia has access to safe walking or cycling routes." The Strategy recommended the Government provide additional resources to promote cycling and to improve walking and cycling routes to schools and throughout communities.

**Protected Bike Lanes and Bikeways Improve Pedestrian Safety**

Research has confirmed that the separated bike lanes and bicycle paths that encourage more people to cycle are also the safest facilities for cycling. Separated bike lanes can reduce sidewalk cycling, which is dangerous for both people walking and cycling, by up to 80%. Many of the measures taken in conjunction with protected bike lanes result in fewer injuries to pedestrians and motor vehicle occupants as well by\(^\text{16}\):

- Reducing crossing distances;
- Making it easier to know which direction cars are coming from - by reducing the number of mixed traffic lanes, protected bike lane projects effectively break each pedestrian street crossing into manageable stages, all of which include tightly defined vehicle movements;
- Adding dedicated turning phases, preventing conflicts with turning vehicles; and
- Reducing traffic weaving - By removing excess traffic lanes, drivers are less likely to be able to swerve around a vehicle stopped for a pedestrian.

Investments in traffic calming and signals as part of bikeway projects also improve pedestrian safety.

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Detailed Recommendations

1. Accelerated Provincial Investment in Cycling and Walking

The large investment required to improve walking and cycling facilities on Provincial roads and bridges; the significant unrealized economic potential of cycling tourism; the high societal cost of cycling and walking injuries and fatalities; and the benefits of investments in cycling facilities for pedestrian safety have prompted us to include pedestrian facilities within our funding recommendations and increase the yearly amount to $100 million per year for ten years.

With additional funds of $75 million per year from local, regional and federal governments for a total of $175 million per year, this will bring the level of funding to the $40 per person per year seen in countries such as the Netherlands that have high levels of cycling and walking and low fatality rates. The UK government realizes that this is the level of funding required and has been increasing funding towards that level.

As shown in the table below, we have found cost estimates for cycling networks in Metro Vancouver, the Capital Regional District and a few other communities totalling $1.205 billion. Based on this total, we estimate the cost for cycling networks in all B.C communities to be on the order of $1.8 billion. Over ten years, this amounts to $40.90 per person per year. While formal estimates are recommend for the other communities, as the known estimates cover over half the population of the Province, there is a strong case for increased investment immediately.

### Cost Estimates for Cycling Networks in BC Communities

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Capital Cost (millions)</th>
<th>Population</th>
<th>Cost per person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro Vancouver</td>
<td>$850</td>
<td>2,300,000</td>
<td>$370</td>
</tr>
<tr>
<td>CRD</td>
<td>$275</td>
<td>360,000</td>
<td>$764</td>
</tr>
<tr>
<td>City of Castlegar</td>
<td>$1.6</td>
<td>7,259</td>
<td>$220</td>
</tr>
<tr>
<td>City of Chilliwack</td>
<td>$27</td>
<td>78,000</td>
<td>$346</td>
</tr>
<tr>
<td>City of Kamloops</td>
<td>$13</td>
<td>86,000</td>
<td>$153</td>
</tr>
<tr>
<td>City of Kelowna</td>
<td>$38</td>
<td>117,000</td>
<td>$325</td>
</tr>
<tr>
<td>Sub Total</td>
<td>$1,205</td>
<td>2,948,259</td>
<td>$409</td>
</tr>
<tr>
<td>Rest of Province</td>
<td>$675</td>
<td>1,651,741</td>
<td>$409</td>
</tr>
<tr>
<td><strong>Total for BC</strong></td>
<td><strong>$1,880</strong></td>
<td>4,600,000</td>
<td><strong>$409</strong></td>
</tr>
</tbody>
</table>

As summarized in the following table, jurisdictions around the world are investing significant amounts in cycling infrastructure. Some, such as the Netherlands, already have high cycling mode shares and require investment to address capacity and safety issues. Most of the others, having cycling mode shares lower than many BC communities, have committed to dramatically increase cycling in a short period of time.

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17 Assumes the cost per person for all communities is the same as the weighted average for the listed communities. The cycling plans have not been evaluated for their completeness nor for the quality of the proposed networks. Several of these plans likely need updating to include all ages and abilities cycling facilities. This will likely result in somewhat increased costs. More details including links to the plans at: [https://docs.google.com/spreadsheets/d/1cbdDX0_zPApdk7mVUWrOrW-Gz8YubXjO-b-907EYoc5E/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1cbdDX0_zPApdk7mVUWrOrW-Gz8YubXjO-b-907EYoc5E/edit?usp=sharing)
### Cycling Investment Levels

<table>
<thead>
<tr>
<th></th>
<th>Investment (millions)</th>
<th>Start</th>
<th>End</th>
<th>Years</th>
<th>Per Person per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>$652</td>
<td></td>
<td></td>
<td>On going</td>
<td>$41</td>
</tr>
<tr>
<td>Delaware</td>
<td>$38</td>
<td>2016</td>
<td>2019</td>
<td>4</td>
<td>$11</td>
</tr>
<tr>
<td>Maryland</td>
<td>$237</td>
<td>2015</td>
<td>2020</td>
<td>6</td>
<td>$7</td>
</tr>
<tr>
<td>Winnipeg</td>
<td>$20</td>
<td>2010</td>
<td>2010</td>
<td>1</td>
<td>$32</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>$18</td>
<td>2010</td>
<td>2010</td>
<td>1</td>
<td>$48</td>
</tr>
<tr>
<td>Vancouver</td>
<td>$25</td>
<td>2010</td>
<td>2011</td>
<td>2</td>
<td>$20</td>
</tr>
<tr>
<td>Surrey</td>
<td>$13</td>
<td>2010</td>
<td>2011</td>
<td>2</td>
<td>$20</td>
</tr>
<tr>
<td>London</td>
<td>$619</td>
<td>2013</td>
<td>2015</td>
<td>3</td>
<td>$27</td>
</tr>
</tbody>
</table>

1.a Existing Provincial Roads and Bridges

In consultation with our members and through working with Ministry staff on issues including access to the Ironworkers Memorial Bridge and the Stanley Park Causeway, we have come to realize an ongoing program to audit, prioritize, plan and fund upgrades to cycling and walking facilities on Provincial roads and bridges is needed. The Province should provide resources to municipalities and regional districts to do the same on their facilities.

These improvements will require significant investment over the next ten years. Improvements to the Causeway will likely cost around $5 million and further investment will be required to improve the connections to Vancouver cycling routes. Access improvements on the south side of the IWMB alone are estimated to cost in the order of $15 million. The cost to improve access to the Alex Fraser Bridge will likely be even more.

Cycling and Walking Audits

We strongly recommend that audits of cycling and walking facilities, maintenance procedures and cycling and walking collisions on Provincial Roads and Bridges be undertaken as part of the implementation of the BC Transportation Plan. The audits should include:

- cycling and walking counts;
- the width and condition of cycling facilities;
- hazard identification;
- areas where debris collects;
- destinations popular with locals and visitors;
- maintenance procedures; and
- cycling and walking collisions, fatalities and injuries.

Our members have identified some Provincial facilities that require cycling and walking improvements including the:

- Agassiz-Rosedale Bridge
- Ironworkers Memorial Bridge Access
- Alex Fraser Bridge and Access
- Sea to Sky Highway Shoulder Widening and Hazard removal
- Southern End of Stanley Park Causeway
→ Lougheed Hwy - Coquitlam, Maple Ridge, Mission, Deroche to Harrison Mills  
→ Highway 4 to Tofino - Sutton Pass to the Visitor Centre at the T junction  
→ Kamloops - a paved path between Valleyview and Barnhartvale that parallels Hwy 1  
→ North Shuswap - a trail paralleling the highway from Squilax to Anglemont  
→ Roads connecting the University of British Columbia and the City of Vancouver

We will continue to collect such facilities and bring them to the attention of MoTI. We expect there are many more across the Province and thus encourage the Ministry to actively audit its infrastructure.

1.b Increased Bike BC Funding and New Complete Streets Funding

Inadequate Funding for Communities
Communities across the province have produced extensive cycling network plans. Unfortunately, due to lack of funding, these cycling networks may not be complete for 20 to 30 years. For instance:

- Surrey’s cycling plan that includes over 400 km of additional bike lanes and paths. With current funding, it plans on completing around 12 km per year, but has indicated that additional funding from senior levels of government would speed implementation of the plan.  
  18
- The Pedestrian & Cycling Master Plan - Capital Regional District estimated the cost of upgrading the bicycle network to attract people of all ages and abilities is around $275 million.
- In order to meet its 2040 targets, TransLink has estimated that completing all-ages cycling networks around the region is at least $850 million.

Increased Bike BC funding and a new funding for Complete Streets would enable communities across B.C. to complete their cycling networks and improve cycling and walking safety.

Along with the increased funding, we also recommend:

1.b.i Increase Bike BC funding allowed per project
→ Especially with the increased cost of facilities designed to attract people of all ages and abilities, the per project amount provided by Bike BC and other cost sharing programs needs to be increased to enable this projects to be built and make it worthwhile for communities to submit funding applications.

1.b.ii Helping Communities With Active Transportation Planning and Design
Many communities in B.C. could use resources and funding to assist with the development of cycling network plans and with the design of cycling facilities. Many existing plans need to be updated as they were completed before it was widely recognized that cycling facilities separated from traffic attract more people of all ages and abilities to cycling and can be safer than unseparated facilities. As well,

18 [http://www.thenownewspaper.com/travel/Ambitious+strategy+aims+cycling+lanes/6991514/story.html]
existing network plans often do not implementation plans with cost estimates making it less likely that they will be implemented in a reasonable period of time.

The BEAT (Built Environment for Active Transportation) program is a good example of a program which assisted communities both with funding and expertise to develop active transportation plans.

→ An updated and expanded BEAT or similar program to help plan cycling and walking networks and design facilities in communities.

1.c Funding for Safe and Healthy Routes to School
We strongly support the recommendation of the Select Standing Committee on Health in A Strategy for Combatting Childhood Obesity and Physical Inactivity in British Columbia Report that:

→ “the government provide resources to local governments and school boards to develop and promote safe routes to school programs and provide additional resources to assist municipalities to address existing walking and cycling infrastructure deficiencies relating to the safe routes to school program.”

2. Evidence Based Standards for Cycling Facility Design
We recommend that the design of the facilities build upon the experience from Europe, where designs encourage people of all ages and abilities to cycle or to combine cycling with transit instead of driving.

2.a Adoption of Evidence Based Standards
The best North American design standards for bicycling are those of the National Association of City Transportation Officials (NACTO). To encourage people to cycle, and to minimize the need for reconstruction of facilities to better standards at a later date, these standards should be adopted in B.C. Designs should also incorporate the experience of cycling countries. For example, there are many excellent bridge and underpass examples in the Netherlands. Standards and guidelines should be updated as needed to reflect the latest research and experience gained in the implementation and operation of other facilities.

New and upgraded cycling and walking facilities will likely be in place for at least the next 50 years. As such, these facilities need to be designed for future demand assuming a significant increase in cycling and accounting for expected population growth.

Facilities should be designed to:

→ Attract people of all ages and abilities including children and seniors;
→ Safely accommodate inexperienced cyclists;

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→ Safely enable the higher-speed cycling required for cycle touring, long-distance commuting, exercise and training on bridges, approaches, connections between communities, and other essential links;
→ Safely accommodate a range of human powered and light-weight electric devices including wheelchairs, mobility scooters, skateboards, in-line skates, cargo bikes, bicycles with trailers; and tandem bicycles;
→ Minimize conflicts between all users including cyclists, pedestrians and drivers;
→ Separate cyclists and pedestrians especially where cycling speeds or user volumes are high;
→ Provide sufficient shy distance from hazards based on cyclist speed;
→ Eliminate exposed fencing and barriers poles that could cause a crash or severely injure a cyclist;
→ Minimize collection of water or debris;
→ Accommodate anticipated cyclist speeds and volumes;
→ Have grades of 3% or less to minimize effort and reduce downhill speeds; and
→ Provide ample sightlines to allow users to see each other in time to avoid collisions.

Provide physical separation where possible
On roads and highways with high traffic volumes or speeds, it is highly desirable to physically separate the cycling facilities from motor vehicle traffic.

The preferred cycling facilities from highest to lowest are:
1. High quality bike paths set apart from a highway right-of-way, particularly if they involved a substantive decrease in distance or grade;
2. High quality bike paths within highway rights-of-way, with safe and efficient crossings at intersecting roads;
3. Physically separated bike lanes, preferably directional and properly integrated into intersection design;
4. Bike lanes separated from traffic with posts;
5. Bike lanes separated from traffic with a painted buffer;
6. Sufficiently wide paved shoulders or painted bike lanes that are well maintained and kept free of road debris, ideally only where traffic speeds are low (<60 km/h), realizing that in rural areas separation may not be always possible.

That said, it is realized that separation is not always possible or may take time to plan, design and fund. We encourage the Ministry to take advantage of road rehabilitation and upgrade projects to improve shoulder width and surface to provide immediate cycling improvements, even if the long-term vision is to provide separation.

In sections of highway with numerous high volume intersections, one-way facilities on both sides of the road are preferred. In sections with few intersections, two-way cycling facilities on one side are acceptable. Ideally the facility should be continuous on one side of the highway as much as possible to minimize at-grade crossings of the highway.

Safely accommodate higher speed cycling
Paths and protected bike lanes should be designed to safely accommodate expected cycling speeds. On bridges, approaches and long downhill sections, paths and protected bike lanes should accommodate high speed cycling through:

- A design speed of 60 km/h;
- One-way paths on both sides with convenient access from all directions to encourage one-way cycling to avoid head-on collisions;
- Ideally a 1.5m or at least a minimum 1m shy distance separating the travel surface of paths and shoulders from hazards including signposts, fence poles, light standards; utility boxes, trees and street furniture;
- Ensuring adequate sightlines; and
- Designing the facility to not pool water and collect debris;

**Provide sufficient shoulder width**
Sufficient shoulder width should account for the following factors:

- Speed of traffic on the adjacent roadway;
- The volume of buses, large trucks and RV’s, considering wind turbulence and off-tracking on corners;
- Significant cross-winds and grades (cyclists need more space when climbing or negotiating cross-winds and avoiding obstacles when descending);
- The presence and condition of rumble strips, drainage grates and road-side barriers, all of which can reduce useable space, introduce hazards and collect debris; and
- How frequently debris accumulates and how quickly it is cleared.

**Intersections**

- At high volume intersections, cyclists and pedestrians should be signal-protected from right and left turning vehicles;
- Markings and colourised surfaces should be used to indicate conflict areas;
- On cycling routes, people should be allowed to ride through intersections without dismounting.

*The Burrard Cornwall intersection features protected bike lanes and signal phases protecting people walking and cycling from turning vehicles.*
Roundabouts

- For higher volume and speed roundabouts, grade-separation for cyclists and pedestrians is preferred. In the Netherlands, cycling underpasses are common;
- Where there is no grade separation, roundabouts should contain protected outer lanes for cyclists and sidewalks for pedestrians.

![Assen, Netherlands roundabout with excellent safety record - Only 4 minor car crashes in 5 years. No crashes involving people walking or cycling.](image)

2. b New Provincial Projects

Over the past two decades, the majority of Provincial infrastructure projects have accommodated cycling. These project have resulted in significant network improvements around the Province.

However, projects implemented as design-build Public Private Partnerships (P3) have proven to be challenging with the results often being less than ideal for cycling. Typically, MoTI has done a good job consulting with the cycling community during the initial phase of the project producing reference designs that provide good cycling accommodation.

The problems have occurred during the design-build phase where the actual design bears little resemblance to the reference design, often resulting in significantly worse accommodation of cycling. As well, the accommodation of cycling during the construction period has often been inadequate.

Sky to Sky Highway

- Shoulders as narrow as 0.9 metres when the standard for 80 kph road is 2.2m and the promised width was 1.5m;
- Hazards, including drain grates not level with the shoulder surface;
- Improperly installed rumble strips reducing the effective width of the shoulder to 1.3m, increasing the risk to cyclists

The William R. Bennett Bridge (Kelowna)

- The reference design included pedestrian/bike paths on both sides of the bridge. This would have allowed easier access to the bridge by both pedestrians and cyclists. After the P3 partner redesigned the bridge, only a two way pedestrian/cycling facility on one side of the bridge remained;
- The surface is unacceptably rough, causing health impacts for some cyclists;
- The slopes on the elevated section of the bridge are steep, discouraging potential cyclists.

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Pitt River Bridge\textsuperscript{21}

- Cycling access is much more circuitous than the old bridge and the reference design;
- Hairpin turns, increasing the risk of cycling falls;
- Poor construction management, including unmarked drop-offs of at least 0.2m in the cycling detours that could have resulted in serious injury.

Port Mann Bridge/ Highway 1 Expansion

- The path on the new Port Mann Bridge is only 3m wide, when the standard for a two-way shared path is 4m plus 0.5m shy distance on both sides. The result will be increased risk of head-on cycling collisions, which could result in serious injuries or fatalities due to high speeds on the long downhill sections;
- An opportunity to provide a direct traffic-free connection as part of the project to the Central Valley Greenway was missed. The current route involves a detour of almost 1 km on a truck route through an industrial area requiring crossing busy United Blv’d twice and also currently requires travelling along United Blv’d for a kilometre.

Recommendations

- Ensure a high standard of cycling facilities are written into project requirements that meet or exceed the reference design;
- Provide sufficient financial incentives to ensure that cycling facilities meet or exceed that of the reference design;
- Both the private partner and the overseeing authority should have cycling and pedestrian facilities experts on their teams that are intimately involved in the design and implementation of the project;
- Feedback should be sought from the cycling community up to and including the final project design;
- There should be a complete audit of the final construction to ensure that all standards have been met and that the cycling facilities are safe to use; and
- Avoid design-build projects until and unless these issues are resolved.

3.6 Provincial Roads Through Communities

From 2007 to 2010 the BC Healthy Living Alliance (BCHLA) worked with 24 local governments and 15 Aboriginal communities on the ‘Built Environment and Active Transportation (BEAT)’ initiative. From that experience, they know that Provincial highways act as real barriers to walking and cycling. It can be very challenging for local communities and to implement measures that would enhance the pedestrian and cycling environment but more responsiveness, flexibility and overall support from the Ministry of Transportation and Infrastructure (MoTI) would make a measurable difference.\textsuperscript{22}

Recommendations

- Adopt all ages and abilities cycling facilities as the default standard for MoTI roads through communities;
- Improve MoTI’s processes for working with local governments to lower speeds, place

\textsuperscript{21} http://wiki.bikehub.ca/committees/images/d/d4/Pitt_River_Bridge_issues_7feb13.pdf

safety-related signage and improve cycling and pedestrian environments and crossings on highways within communities;

Allocate funding to plan and implement cycling and walking improvements on MoTI roads through communities.

3. Education and Marketing

It is critical that cycling become a part of more people's everyday transport choice if we are to meet Provincial transportation and GHG emissions reduction goals. Facilitating adult cyclists who will commute, undertake short shopping trips, or visit friends by bike will in turn normalize cycling – supporting an environment where their children continue to cycle into adulthood. There is strong support for cycling safety education for children and adults in B.C. with 58% saying that it is important with only 17% saying that it is not important.23

Enabling travel choice is a complex interrelated process requiring awareness, recognition, trial, confidence-building and habitualisation. Education and marketing are intrinsically linked to developing the demand to maximize the use and benefit of investments in infrastructure. There are many examples from around the world such as Safe Routes to School, workplace travel plans, and smarter travel towns, where targeted promotion, skills, and infrastructure improvements combine to create sustained and dramatic changes in local travel choice and public attitudes.

3.1 Cycling Skills Training

Efforts are underway lead by HASTe, HUB Cycling and the BCCC to encourage the adoption of coordinated bike skills training framework, unifying a variety of initiatives including Streetwise Cycling Courses, Ride the Road high school cycling curriculum, Workplace Cycling Education, CAN-Bike and RideLife, into a single, comprehensive BC standard. Provincial funding would be very instrumental in helping this initiative move forward and making cycling education universally available.

This would be a first for North America but experience from the UK 'Bikeability' initiative shows that coordinated training led to 22% of trainees in London stating they cycled a lot more afterwards. While initially focused at schools, a certification process for cycle training to a single BC standard could also provide a service to businesses and individuals. Coordinated action on cycle skills would also help address public concerns about cyclist behaviour.

Ride the Road is HUB’s complete cycling educational program to empower and enable students to commute to school safely and confidently while learning the value and benefits of biking as a reliable and practical mode of transportation. The program shows encouraging results. Post course surveys indicate a significant increase in cycling levels and confidence with cycling in traffic.

Streetwise Cycling Courses provide adult education in community centres around Metro Vancouver, resulting in a 142% increase in cycling post-course and an additional significant increase in cycling in poor weather.

Kids on Wheels is the BC Cycling Coalition’s new initiative to introduce preschool children to cycling through hands on experience with balance bicycles and cycling related toys and books.

3.2 Motorist Training and Education
The responsibilities of motorists and cyclists and safety tips for sharing the road should be included in driver education programs, courses and remedial programs.

3.3 Bike Sense
The British Columbia Cycling Coalition assumed responsibility for Bike Sense, the British Columbia Bicycle Operators Manual from the Greater Victoria Cycling Coalition in late 2014. The Bike Sense Workshop, also in late 2014, brought fifty cycling education experts together from around the Province to discuss and plan the future of Bike Sense. We are currently developing plans to update the material to reflect the latest safety research and broaden the distribution of Bike Sense and other cycling educational material.

3.4 Awareness of New Types of Facilities
As new types of facilities such as separated bike lanes, bike boxes, crossbikes, bicycle traffic signals, traffic circles and roundabouts are introduced, efforts should be undertaken to ensure motorists, cyclists and pedestrians know how to safely use these facilities and interact with each other.

3.5 Marketing
A $5 million program of targeted promotion and awareness activities would broaden and consolidate current projects including; Bike to Work Week, Bike to School Week, Bike Month, and the Commuter Challenge. Increased investment would allow development of publicity campaigns and specific projects such as toolkits for schools and employers to encourage cycle commuting, specific projects aimed at groups where cycling is below average and a 'share the road' initiative to increase mutual respect and awareness. Establishing a promotional program for cycling as transport will also generate aggregated impacts by strategic cooperation with other agencies around the co-benefits of cycling as an activity including for preventative health care, green tourism, and sports.

4. Hazard Reduction

4.a Improved Reporting and Tracking of Cycling Injuries, Hazards and Collisions

Tracking and Monitoring Hazards, Debris and Collisions
Currently only collisions with motor vehicles are tracked in a method that is useful for determining problem areas on roads. As there are a significant number of cycling collisions causing injuries involving debris, hazards, wildlife, other cyclists and pedestrians, but not motor vehicles, the Province needs to track and monitor these collisions and injuries to determine where problem areas are, what improvements are needed and to prioritize upgrades and maintenance improvements.

Reporting Hazards, Debris and Collisions by the Public
The public needs easy and obvious methods to report hazards and debris on shoulders and highways. Possibilities include:

→ A 311 line that is dispatched to the correct authority to address the problem;
→ Signs with information on reporting hazards; and
→ Mobile websites and apps. The BCCC is investigating the development of a mobile app focused on reporting cycling hazards, collisions and injuries.

4.b Improved Maintenance and Hazard Removal

Increase maintenance budgets for path and on-road cycling facilities to enable the prompt removal of debris, snow, and ice and to ensure facilities remain in good repair allowing safe all weather cycling.

Recommendations
→ Regular debris removal and sweeping;
→ Prompt ice and snow removal. In some jurisdictions, bicycle paths are cleared before many roads are;
→ Resurfacing and repair of roads and paths;
→ Pruning and trimming of trees and greenery near paths, roads and shoulders;
→ Removal of posts, signs and other hazards that are too close to bicycle facilities.

4.c Improved Construction Management

Construction activity often results in increased risk of injury for people cycling. The "Bicyclists’ Injuries and the Cycling Environment" study found the injury risk due to construction is about 2 times higher than no construction.\(^{24}\) Improved Province-wide construction management policies and practices on facilities used by people cycling need to be adopted to decrease the risk of injuries.

Major road and transit construction projects could also be used as an opportunity to encourage cycling. If planned cycling network improvements are implemented in areas impacted by road and transit projects in advance of construction, these improvements could prompt people to try cycling to avoid traffic delays. As the cycling network is not well development in many areas, detour planning should occur early on in the project design process so network improvements can be built that will also improve the safety and convenience of the cycling detour.

Recommendations
→ Detours should be planned early in the project planning process
→ Detours should be avoided whenever possible through active construction management;
→ Detour routes should be paved and maintained without loose gravel, soil and debris;
→ Detour routes should be as direct and obvious as possible;
→ Construction zones should be well lit at night and hazards should be marked so they can be seen at night by cyclists;

\(^{24}\) [http://cyclingincities.spph.ubc.ca/injuries/the-bice-study/](http://cyclingincities.spph.ubc.ca/injuries/the-bice-study/)
→ Ensure that detour routes allow cyclists to safely cross arterials;
→ Signed dismounts should be avoided as dismounting increases the risk of falls and dismount signs are often ignored as they are often improperly used;
→ If dismounting is unavoidable, flaggers should be used to ensure compliance;
→ Only place sign stands away from any moving surface. They should not be placed on the roadway, shoulders, bike lanes, paths or sidewalks;
→ Avoid signage that can become a hazard. Attach signs to existing or new posts, jersey barriers or barrels. Signage that can easily fall over in such as tripod stands and signs with rubber should be avoided as it becomes a hazard for cyclists and other road users;
→ Avoid collapsible sign stand stands. The feet are hazardous to cyclists and pedestrians

5. Legislation and Enforcement

5.a Changes to the Motor Vehicle Act
The BCCC and our member organizations are in the process of drafting recommendations for changes to the Motor Vehicle Act which we will submit to the Province soon. The recommendations included below are particularly relevant to safety.

Safe Passing Distance
This law would require that motor vehicles pass cyclists by a safe distance. We recommend at least:

→ 1.0 m for motor vehicle speeds of 50 kph or less
→ 1.5 m for motor vehicle speeds of greater than 50 kph and up to 80 kph
→ 2.0 m for motor vehicle speeds greater than 80 kph

In some other jurisdictions, drivers are allowed to cross a double yellow line, if necessary and safe to do so, in order to pass a cyclist. ICBC currently recommends passing cyclists by at least 1 metre in their driver education material. Nova Scotia and 21 U.S. states have passed safe passing distance laws.

Riding on Shoulders
The MVA currently requires cyclists to ride on a paved shoulder when one exists, thus not allowing cycling on the travel lanes. However, in many instances paved shoulders are not safe to cycle on due to problems, including debris, cracks, potholes, improperly installed rumble strips, overgrown vegetation, snow, and ice. Shoulders are often of substandard width for the motor vehicle speeds on highways. Cyclists should have the option of riding in the travel lanes should they determine that the travel lane is safer than the shoulder. The best method to encourage cyclists to use shoulders and bike lanes is to build and maintain them to a high standard, keeping them debris-free, instead of banning cycling on travel lanes.

Railway Tracks
Cyclists need to cross train tracks at or near a 90 degree angle. When the tracks aren’t perpendicular to the road, the cyclist needs to ride across the through lane, often at a sharp angle. Motorists don’t know to give cyclists proper room to safely perform this manoeuvre.

We recommend adding the following to MVA section “Railway Crossings S.185"
185 (7) Unless a special facility is provided to allow cyclists to cross the track safely without using the normally travelled portion of a highway, it is unlawful to pass a cyclist at or in close proximity of a railroad crossing angled at more than 120 degrees or less than 60 degrees in relation to the highway. This prohibition shall at all times be posted with a sign in advance of such railway crossing and shall be effective from the location of said sign to a point 30 metres beyond the railway crossing.

5. Blanket Speed Limits Below 50 km/h
According to Transport Canada, B.C. has higher traffic fatality rates than the Canadian average. Transport Canada also states “Research indicates that a 1% reduction in speed results in reducing the likelihood of a fatal collision by 5% (OECD, 2008). Therefore, a downward shift in the distribution of driving speeds for all drivers would be beneficial not just for those speeding on highways.”

Currently, the Motor Vehicle Act sets a blanket speed limit for municipalities (i.e. the default speed limit when no speed limit signs are present) of 50 km/h. Thus, municipalities must place a sign on every block where the speed limit is less than 50 km/h. This can be rather unwieldy and expensive.

Municipalities should be able to set blanket speed limits less than 50 km/h within their boundaries. Research shows that pedestrian and cyclist fatalities increase dramatically in collisions where the speed of the motor vehicle is greater than 30 km/h. This change, in combination with traffic calming, would make residential streets safer for children, seniors, pedestrians, cyclists and motorists.

In 2009, the Union of BC Municipalities endorsed resolution B19 ENABLING LEGISLATION TO ALLOW MUNICIPALITIES TO CREATE BLANKET SPEED ZONES.

5. Enforcement Policies Focused on Reducing Walking and Cycling Injuries and Fatalities

Prioritizing Safety with Strict Speed Limit Enforcement
In many other jurisdictions (e.g. NSW and Victoria, Australia), prioritizing safety has led to strong enforcement of speed limits resulting in drivers complying with designated speeds, saving lives and reducing accidents and property damage. The speed review process is an opportunity to similarly prioritize safety and compliance with laws.

Strict Enforcement at Night and When Visibility is Poor
Cyclist and pedestrian fatality rates increase significantly at night and during the fall and winter when weather limits visibility. Speed limits and other traffic laws should be enforced more strictly in areas where there are people walking and cycling. Campaigns should emphasize that drivers should go slower than posted speed limits when conditions and visibility are poor.

Strict Speed Limit Enforcement When Cyclists Present

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25 Transport Canada, 2011
27 http://www.ubcm.ca/assets/Resolutions~and~Policy/Resolutions/Resolutions%20Excerpted%20from%20Convention%20Minutes%202009.pdf
Another option would be a policy of strict speed limit enforcement when cyclists are present on a highway. This could also apply when there are stopped or parked vehicles on the shoulder or pedestrians walking on the shoulder or roadway.

**Strict Speed Limit Enforcement In Rightmost Travel Lane**
Strict speed limit enforcement in the rightmost travel lane would improve cyclists' safety while allowing higher speeds for motor vehicle in the left lane(s), where present. This may make passing slower vehicles easier for motorists as well.

**Speed Enforcement Cameras**
The targeted use of fixed and mobile speed enforcement cameras that do not impede cyclists or other road users should be considered on dangerous sections of road with cycling facilities that are inadequate for actual motor vehicle speeds and where other means of enforcement are problematic. As these sections of road likely have missing or substandard shoulders, pulling vehicles over can be dangerous both for the occupants of the vehicles and for the police officers. The vehicles may also block the shoulders, requiring cyclists to enter travel lanes. In any case, speed enforcement cameras should not be seen as a substitute for the upgrading of inadequate and unsafe cycling facilities.

Speed cameras have been found effective in reducing crashes, injuries and fatalities\(^\text{28}\). Transport Canada (Transport Canada 2011) states that “… greater speed enforcement is key. Speed cameras and red light cameras could be implemented more widely across the country and their usage publicized.”

### 6. Cycling Tourism

1. A comprehensive, province-wide, paved BC cyclotouring network of on-road and off-road cycling facilities designed to appeal globally to cyclists, non-cyclists, families, seniors, and non-risk takers to travel to BC and tour with their bicycles.
2. Widening of highway shoulders to exceed BC’s April 2000 Cycling Guide
   a. Width conducive to entice non-cyclists, families and less risk-taking cyclists to tour on bicycle
   b. Relocation of rumble strips to underneath the outside lane’s white line
   c. Shoulder pavement cleaning every 6 week between April and October
   d. Wider shoulders on climbs and descents exceeding 4%
   e. Maintaining quality shoulder pavement surfaces at level that attract people to cyclotour
3. Development program for rail trails and off-road rural and urban trails between cities, including acquiring rail lands
4. Support and grow multi-modal cyclotouring in BC with bicycles
   a. 24-hour, on call George Massey Tunnel shuttle service
   b. 3 bike racks on buses and allowing bicycles in buses when not fully loaded
   c. Expand bike racks on ferries
   d. Cycling access facilities to airports and at airport facilities and services for shipping bicycles by air.